Chapter V
Interaction Design for Personal Photo Management on a Mobile Device

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ABSTRACT

This chapter explores some of the technological elements that will greatly enhance user interaction with personal photos on mobile devices in the near future. It reviews major technological innovations that have taken place in recent years which are contributing to re-shaping people’s personal photo management behavior and thus their needs, and presents an overview of the major design issues in supporting these for mobile access. It then introduces the currently very active research area of content-based image analysis and context-awareness. These technologies are becoming an important factor in improving mobile interaction by assisting automatic annotation and organization of photos, thus reducing the chore of manual input on mobile devices. Considering the pace of the rapid increases in the number of digital photos stored on our digital cameras, camera phones and online photoware sites, the authors believe that the subsequent benefits from this line of research will become a crucial factor in helping to design efficient and satisfying mobile interfaces for personal photo management systems.
INTRODUCTION

Long before digital technology came into everyday use, people have been managing personal photos with varying degrees of effort. Individuals’ photo management strategies ranged from stacking photos in shoe boxes to carefully placing them into a series of photo albums with detailed notes of where and when each photo was taken or a witty caption beside it. Reminiscing and story-telling past events that have been visually recorded in personal photos is a highly-valued activity for many people. This gives meaning to the person’s past events and also works as a socially-binding and relationship-enhancing device at gatherings of family or friends. With the Internet revolution, and the arrival of inexpensive digital cameras, people’s photo organizing and sharing behavior has been evolving as new technologies allow different ways of managing photo collections. This is exemplified with online photoware applications such as Flickr, with which people can now upload personal photos taken from their digital cameras onto a shared web space on which collaborative annotation, browsing and sharing photos with other people is possible.

Another aspect of the development of digital photography is that people’s behavior in capture of photos is changing as well. In particular, due to the low cost and ease of capture nowadays people are taking many more photos than in the past. This is possibly best illustrated by the ubiquity of camera phones, mobile devices that can be used as digital camera as well as a phone. Many people carry their phone with them at all times meaning that they can capture their everyday lives and holiday scenes whenever they want. This change in capture behavior can also have a significant impact on people’s personal photo management activity. Once captured, the phone can be used to send photos to a friend’s mobile phone or to upload them to a public Website for instant sharing and receiving comments back. This means that when designing personal photo management tools, we should consider the implications of the changes in user photo capture behavior arising from the emergence of the ubiquitous availability of the means of photo capture. For example, there is a need to design specific user-interfaces for photo management on a camera phone itself. A camera phone may be used merely as a capture device that takes photos and stores them, to be copied later to a PC for further photo management. However, the quality of screens now commonly available on mobile phones means that it is quite reasonable to look to design tools that enable users to organize, annotate and browse photos on the mobile phone itself. Between these two extreme cases, there is a spectrum of varying degrees to which a camera phone or other mobile device can be integrated into overall photo management functions and tasks, effectively a continuum of trade-off among technological resources and the user’s effort and time. For example, due to the difficulty of text input on a camera phone arising from physical constraints, it may be easier for the user to fully annotate photos after copying them onto a desktop PC at home. Even so, a user in some situations might still want to make the effort to annotate their photos using the mobile and to send them to a friend for the benefit of its immediacy and not having to do the extra work of copying photos to a PC at home in the evening before performing the annotation. On occasion some users will want to bulk-upload a large number of photos taken at a party directly to a website without any annotation, e.g., to share with close friends. Depending on the design decisions on the allocation of photo management tasks for different devices, the optimal user-interface for such tasks on the mobile device will vary. Currently available interfaces on camera phones and digital cameras for photo management illustrate this possible diversity of user task requirements.

Particular challenges faced in designing and evaluating mobile interfaces for personal photo management arise due to, among other things, the following:

- New technology regularly emerges and applications constantly evolve.
- Mobile users are difficult to observe.
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